

Page 2

**IN THE CLAIMS**

In Claim 1 at the end of Line 4, insert --and being non-cylindrical, said resonator being mounted on a dielectric support--.

In Claim 2, Line 1, delete "cavity has a half cut resonator located therein" and insert --resonator is selected from the group of a half cut resonator and a quarter cut resonator--.

In Claim 21 at the end of Line 4, insert --and being non-cylindrical, said resonator being mounted on a dielectric support--.

In Claim 22, delete "cavity has a half cut resonator located therein" and insert --resonator is selected from the group of a half cut resonator and a quarter cut resonator--.

Page 3

**REMARKS**

The Examiner has rejected Claims 1, 21 and 39 as being anticipated by Zaki. The Examiner appears to take the position that since Zaki states that the conductor resonators can have a cylindrical shape, but also a ring or doughnut shape, that Zaki therefore describes the use of cut resonators. It is respectfully submitted that that conclusion by the Examiner is wrong. A ring shaped resonator or doughnut shaped resonator is simply a cylindrically shaped resonator with an opening in a center thereof. The ring shape and doughnut shape are identical to one another and function in much the same manner as a cylindrically shaped resonator. Applicant is not aware of any reference in the prior art that would indicate that a ring shaped resonator is a cut resonator. Cut resonators are described in U.S. Patent No. 4,881,051 issued on November 14, 1989. There is no suggestion in Zaki that cut resonators be used to improve spurious performance. Zaki does suggest that composite ring resonators can be used to improve spurious performance. The alternate ring or doughnut shape resonator described in Zaki is not a cut resonator. The resonators described in Zaki all have a cylindrical shape. In Column 3, beginning at Line 42 through Column 4, ending at Line 61, the Zaki patent describes composite resonators as being formed by the combination of cavities 3, 5 and 7 and the conductor resonator elements to reduce the physical size of the composite resonator (i.e. the combination of the conductor resonator elements and the cavities) as compared to "empty" cavity resonators designed for the same resonant frequency. Even though cut resonators had been well known for some time, at the time that the application that forms the basis of the Zaki application was filed (i.e. 1996) there is no mention whatsoever in Zaki of using cut conductor resonators to further reduce the size or to further improve the performance. It is therefore respectfully submitted that the rejection of Claims 1, 21 and 39 based on Zaki should be withdrawn.

The Examiner has rejected Claims 1, 2 4 to 11, 19, 21, 22, 24 to 32, 36 and 39 as being anticipated by Salehi et al. The Salehi paper was published on or about June of 2001 and the present application has a priority date of December 11, 2000. The Salehi reference is therefore not prior art and the rejection should be withdrawn.

The Examiner has rejected Claims 2, 4 to 7, 12, 15, 18 to 20, 22, 24 to 27, 31, 32, 33, 36 and 37 as being unpatentable over Zaki in view of Nishikawa. It is respectfully

## I CLAIM:

1. (Currently Amended) A bandpass filter comprising at least one cavity with said at least one cavity having a cut resonator therein, said cavity having at least one wall and said resonator being out of contact with said at least one wall, said resonator being a conductor-loaded resonator and being non-cylindrical, said resonator being mounted on a dielectric support.
2. (Currently Amended) A filter as claimed in Claim 1 wherein said ~~cavity has a half cut resonator located therein~~ resonator is selected from the group of a half cut resonator and a quarter cut resonator.
3. (Canceled) A filter as claimed in Claim 2 wherein said resonator is a conductor-loaded resonator.
4. (Previously presented) A filter as claimed in Claim 2 wherein the cavity has a rectangular shape and said resonator is planar mounted.
5. (Original) A filter as claimed in Claim 4 wherein said resonator has a modified shape.
6. (Original) A filter as claimed in Claim 5 wherein said modified shape has at least one cut away portion.
7. (Original) A filter as claimed in Claim 5 where said modified shape has at least a first cut away portion and a second cut away portion.
8. (Original) A filter as claimed in Claim 5 wherein said resonator has a semicircular shape with one straight edge and a first cut away portion having a rectangular shape and being substantially centrally located in said straight edge.
9. (Original) A filter as claimed in Claim 8 wherein said resonator has a substantially arcuate edge and second cut away portion having a rectangular shape that is substantially centrally located in said arcuate edge.
10. (Original) A filter as claimed in Claim 9 wherein said resonator wherein said second cut away portion is larger than said first cut away portion.
11. (Original) A filter as claimed in Claim 5 wherein the modified shape of said resonator is cut away portions in specific areas to improve spurious performance.
12. (Previously Amended) A filter as claimed in Claim 2 wherein said resonator is made from superconductive material.

13. (Previously Amended) A filter as claimed in Claim 2 wherein said conductor-loaded resonator is used in combination with at least one dielectric resonator.
14. (Previously Amended) A filter as claimed in Claim 2 wherein said filter has at least two cavities, there being a conductor-loaded resonator in one of said at least two cavities and a dielectric resonator in the other of said at least two cavities.
15. (Original) A filter as claimed in Claim 5 wherein there are at least two conductor-loaded resonators located in said at least one cavity to create a dual mode conductor-loaded cavity resonator with improved spurious performance.
16. (Original) A filter as claimed in Claim 13 wherein said filter has eight cavities, a first cavity and a last cavity containing conductor loaded resonators and the remaining cavities containing dielectric resonators.
17. (Original) A filter as claimed in Claim 13 wherein said filter has eight cavities, a first, second and third cavity each containing a conductor-loaded resonator and the remaining cavities containing dielectric resonators.
18. (Original) A filter as claimed in Claim 2 wherein said resonator has a mode selected from the group of a single mode and a dual mode.
19. (Previously Amended) A filter as claimed in Claim 2 wherein said conductor-loaded resonator is made from a material selected from the group of metallic, superconductive, thick film superconductive and single crystal.
20. (Previously Amended) A filter as claimed in Claim 2 wherein said resonator is made from copper.
21. (Currently Amended) A microwave cavity having at least one wall, said cavity comprising a cut resonator located therein, said resonator being out of contact with said at least one wall, said resonator being a conductor-loaded resonator and being non-cylindrical, said resonator being mounted on a dielectric support.
22. (Currently Amended) A cavity as claimed in Claim 21 wherein said ~~cavity has a half cut resonator located therein~~ resonator is selected from the group of a half cut resonator and a quarter cut resonator.
23. (Canceled) A cavity as claimed in Claim 22 wherein said resonator is a conductor-loaded resonator.
24. (Previously Amended) A cavity as claimed in Claim 22 wherein said cavity has a

rectangular shape and said resonator is planar or mounted.

25. (Original) A cavity as claimed in Claim 24 wherein said resonator has a modified shape.

26. (Original) A cavity as claimed in Claim 25 wherein said modified shape has at least one cut away portion.

27. (Original) A cavity as claimed in Claim 25 wherein said modified shape has at least a first cut away portion and a second cut away portion.

28. (Original) A cavity as claimed in Claim 25 wherein said resonator has a semicircular shape with one straight edge and a first cutaway portion having a rectangular shape and being substantially centrally located in said straight edge.

29. (Original) A cavity as claimed in Claim 25 wherein said resonator has a substantially arcuate edge and a second cut away portion having a rectangular shape that is substantially centrally located in said arcuate edge.

30. (Original) A cavity as claimed in Claim 28 wherein said resonator has an arcuate edge and a second cut away portion having a rectangular shape that is substantially centrally located in said arcuate edge.

31. (Original) A cavity as claimed in Claim 24 wherein said resonator is made from metal.

32. (Original) A cavity as claimed in Claim 25 wherein the modified shape of said resonator are cut away portions in specific areas to improve spurious performance.

33. (Previously Amended) A filter as claimed in Claim 22 wherein said resonator is made from superconductive material.

34. (Previously Amended) A cavity as claimed in Claim 22 wherein said conductor loaded resonator is used in combination with at least one dielectric resonator.

35. (Original) A cavity as claimed in Claim 25 wherein there are at least two conductor loaded resonators located in said cavity to create a dual mode conductor-loaded cavity resonator with improved spurious performance.

36. (Previously Amended) A cavity as claimed in Claim 22 wherein said conductor loaded resonator is made from a material selected from the group of metallic, superconductive, thick film superconductive and single crystal.

37. (Previously Amended) A cavity as claimed in Claim 22 wherein said resonator is

made from copper.

38. (Canceled) A method of improving the spurious performance of a bandpass filter, said method comprising locating a cut resonator in at least one cavity of said filter, said cavity having at least one wall and said resonator being located out of contact with said at least one wall.

39. (Original) A method of improving the spurious performance of a bandpass filter said method comprising locating a conductor-loaded cut resonator in at least one cavity of said filter, said cavity having at least one wall and said resonator being located out of contact with said at least one wall.